

tudes of the moon are observed at sea to-day than at any time previously.

There is one class of reader to whom the work of Prof. Jacoby should especially commend itself, and that is the fortunate owner of the palatial steam yacht who would fain make himself acquainted with what it is that his sailing master is about. It was perhaps in the interest of this type of reader that a final chapter is devoted to a circumstantial account of the voyage of the hypothetical steam yacht *Nav* from New York to Colon on December 18, 1917. Moreover, the story is very well told. H. B. G.

BEVERAGES.

Beverages and their Adulteration. Origin, Composition, Manufacture, Natural, Artificial, Fermented, Distilled, Alkaloidal, and Fruit Juices. By Dr. Harvey W. Wiley. Pp. xv+421+11 plates. (London: J. and A. Churchill, 1919.) Price 21s. net.

DR. WILEY remarks that his book "is not written for the scientific investigator, but for the average, sober-minded, reasonably well-educated American citizen." A general account of the beverages discussed is, in fact, what is given, neither severely technical nor flimsily "popular." The facts are stated carefully, as would be expected from the author, but little or no scientific knowledge on the part of the reader is assumed.

Water, as the beverage *par excellence*, is given pride of place. Both ordinary drinking supplies and mineral waters are dealt with, and the information given is such as will enable the reader to obtain an intelligent idea of water supply in its bearing upon the public health and upon manufacturing operations. Various processes of water purification are briefly described, and the utility of chemical and bacteriological analyses of water is explained. Touching on the widespread faith of ordinary humanity in the virtues of medicinal springs, the author dryly remarks that this faith is "not so well founded in fact as it is extensive in belief." At the same time, he indicates the factors producing the undoubted benefits which often result from "taking the waters"—namely, the change of habits, the simpler diet, avoidance of excesses, and so on. These, of course, are active aids in restoring health even when the water itself has no particular therapeutic value, except, perhaps, as a laxative.

Apropos of the habit of drinking ice-cold beverages—a habit more common on the other side of the Atlantic than here—the evil effects are summed up in an amusing quotation:—

Full many a man, both young and old,
Has gone to his sarcophagus
By pouring water, icy cold,
A-down his hot œsophagus.

"Soft drinks" have an especial interest for Americans just now, and perhaps they may presently acquire an added importance for ourselves.

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The term is applied in the United States to "non-alcoholic" beverages. Whilst the typical "soft drink" is soda-water mixed with a flavoured syrup, other "soft" beverages are legion. Apart from the undesirability of much sugar in drinks consumed largely by children, and the above-mentioned habit of taking them ice-cold in hot weather, Dr. Wiley does not see much objection to the general run of non-alcoholic beverages when these are prepared in a hygienic manner from wholesome materials. Some, however, contain drugs such as caffeine or cocaine; these are highly objectionable, and should, the author considers, be prohibited by law.

In the sections devoted to tea, coffee, and cocoa the reader will find some notes and historical sketches that are worth perusing, apart from the main descriptions of these beverages.

An interesting section is the one dealing with wine. Dr. Wiley has personally inspected nearly all the French vineyards where the most famous wines are produced, and has also visited the Spanish, German, and other wine-growing areas in Europe. His pages will be welcomed as giving a present-day account of the industry. He remarks, by the way, that the mean annual wine-production of the Château Y'quem is only 90 tuns, and opines that there is something miraculous in this quantity supplying the large amount of Château Y'quem wine, so-called, that is drunk in the world.

Some sensible advice is offered on the production of uniform and distinctive types of wine in the United States, and on the adoption of distinctive native names for them, instead of calling them by foreign names which are not really applicable.

Whilst here and there one misses the facile touch of the purely literary man, Dr. Wiley's occasional notes and historical extracts serve agreeably to enliven the substantial body of facts which he has brought together. The book is, of course, written from the American point of view, but much of the matter is of quite general interest, and will appeal to readers on both sides of the Atlantic. C. SIMMONDS.

OUR BOOKSHELF.

Les Symbiotes. By Prof. Paul Portier. Pp. xx+315. (Paris: Masson et Cie, 1918.) Price 5 francs.

THIS book, dedicated to his Serene Highness the Prince of Monaco, contains a lively exposition of a heresy, in regard to which the author frankly admits that if some years ago he had seen it stated at the beginning of an essay, he would probably have read no more. The heresy is that apart from bacteria, all organisms are double being formed by the association and "emboîtement" of two different kinds of creature. There are partners within every cell, partner-bacteria, which the author calls "symbiotes." A symbiote is a domesticated micro-organism with two remarkable properties, an extreme plasticity that

enables it to adapt itself to the most diverse conditions, and a strong capacity for synthesis. These symbiotic bacteria come in with the food from the extra-organismal environment, and, though the partnership they form is usually indissoluble, they may in certain circumstances rejoin their wild relatives and live an independent life.

Every naturalist knows that lichens are double organisms, due to the symbiosis of alga and fungoid partners, which form a very effective unity. Prof. Portier maintains that all organisms except bacteria have in a similar fashion a dual nature. A theory somewhat like this was propounded by Mereschowsky in 1910. But if all cells are thus dual, why, one hastens to ask, have not the ubiquitous, symbiotic, intra-cellular bacteria been seen before? The answer is that they have been often seen, but persistently misinterpreted. They are the components of the mitochondrial apparatus, those minute formed bodies, with many an alias, which have been described in the cytoplasm of all sorts of cells. It is true that these mitochondria have often been credited, with more or less probability, with a definite functional rôle in the metabolism of the cell, a rôle differing from cell to cell; but are not the symbiotes very plastic? Prof. Portier is good-humoured enough to quote the paradox that a theory is not of value unless it can be demonstrated false. We have no hesitation in prophesying that his theory will attain that value—which is just what he would have said himself a few years ago. We are bound to admit that the author is a downright good sportsman.

LETTERS TO THE EDITOR.

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The Magnetic Storm of August 11-12, 1919.

ONE of the very great magnetic storms, the most violent recorded at this observatory since that of September 25, 1909, commenced quite suddenly at 6.50 G.M.T. on August 11 from a very slightly agitated normal curve in both the elements of declination and horizontal force. The H magnet increased sharply by 84γ ($1\gamma \equiv 10^{-5}$ C.G.S. unit), and the D magnet swung $10'$ to the west. The direction of motion in each element was immediately reversed, with a very rapid decrease of 113γ in H, and a swing in D, equally rapid, to the east of $16'$. After a few very rapid swings the spot of light due to H decreasing went off the recording drum at 7 a.m., and remained off until it returned at 7.24 G.M.T. At 8.12 G.M.T. H increased rapidly, the range of the swing exceeding 446γ . At 8.50 G.M.T. it again decreased rapidly, the spot of light remaining off the recording drum until 9.43 G.M.T. These oscillations in H were accompanied by rapid swings in D. After its sudden increase and decrease at the beginning of the storm it swung $60'$ to the west. At 8.52 G.M.T. it was $50'$ in the opposite direction. The extreme range in D during the storm was $110'$,

and of H, since the spot of light travelled off the drum on either side, greater than 780γ .

The greatest phase of the storm was between the hours 14 and 20 G.M.T. on August 11. The spot of light with increasing H was twice off the drum, from 15.36 to 16.10 and from 16.20 to 16.38 G.M.T. At 20 G.M.T. the oscillations of H were less rapid, but they recommenced, after a comparative lull, at 0.50 G.M.T. on August 12. At 1.38 G.M.T. a fine peak of decreasing H began, which was followed by a peak of increasing H at 3.15 G.M.T., the total range being 404γ . Corresponding with this movement D showed a very fine peak of swing to the west, with a range of $66'$, at 1.48 G.M.T. These oscillations in both elements, particularly at the beginning and at the maximum phase of the storm, were extremely rapid.

These rapid oscillations were succeeded for a period of about five hours by a violent shivering of relatively small amplitude, but of great rapidity, in both H and D. This phenomenon of so marked a type I cannot recall to have seen in former storms. After this, at 8.30 G.M.T., August 12, the swings became slower and smaller in amplitude on the whole, until the storm died quite abruptly in H, and less marked, though abrupt, in D, at 19 G.M.T. on August 12.

The *Times* for August 12 announced that the Minister of the Interior in Spain had notified the Press of a breakdown in telegraphic and telephonic communication on the preceding day. The postal authorities in this district were also inconvenienced on the same day by earth currents. Needless to add that the solar surface has been greatly disturbed by sun-spots lately.

I looked out for a possible display of aurora on the night of August 11, but the brightness of the moon effectually veiled any such appearance, even if it were present. The cirrus clouds, however, were arranged in streaks, seemingly radiating from the north-west. I have noticed such an arrangement of the cirrus clouds in former magnetic storms.

A. L. CORTIE, S.J.

Stonyhurst College Observatory, August 14.

Wild Birds and Distasteful Insect Larvæ.

I HAVE read the letter of the Hon. H. Onslow (NATURE, August 14, p. 464) with much interest, and I shall certainly continue the investigation as soon as opportunity offers.

I regret that I must disagree with the attitude adopted by Mr. Edward R. Speyer (NATURE, August 7, p. 445). In my letter on the subject I had no intention of refuting the observations of Prof. Poulton or of any other observer. I simply recorded what I had seen, and suggested that parasitism of the larvæ might afford an explanation, but Mr. Speyer introduces a condition which certainly did not exist in the spring of 1918. He writes:—"In times of stress birds have long been known to subsist upon insects with highly distasteful qualities"; and again: "The currant-moth larva . . . has merely been eaten by the thrush, and possibly by the other birds mentioned . . . when the stress of having to feed a family has made such a practice a necessity."

At the time my observations were made there was no necessity for the birds to feed upon these larvæ. Insect larvæ of all kinds were seldom, if ever, more numerous. There were an abundant supply and a great variety. The currant-moth larvæ were probably the most numerous, and with such an ample supply of food the birds fed upon them.

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